REPORT DOCUMENTATION PAGE

1. Report Security Classification: UNCLASSIFIED	
2. Security Classification Authority:	
3. Declassification/Downgrading Schedule:	
4. Distribution/Availability of Report: DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.	
5. Name of Performing Organization: JOINT MILITARY OPERATIONS DEPARTMENT	
6. Office Symbol: C	**7. Address**: NAVAL WAR COLLEGE 686 CUSHING ROAD NEWPORT, RI 02841-1207
8. Title (Include Security Classification): INFORMATION TECHNOLOGY: THE FOCUSED LOGISTICS ENABLER (UNCLASSIFIED)	
9. Personal Authors: Lieutenant Commander James R. Macaranas, SC, USN	
10.Type of Report: FINAL	**11. Date of Report**: 04 February 2002
12.Page Count: 23 | **12A. Paper Advisor (if any):** Captain William Nash, USN	
13.Supplementary Notation: A paper submitted to the Faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.	
14. Ten key words that relate to your paper: Logistics, Focused Logistics, Operational Logistics, Theater-level Command and Control, Information Technology Integration.	

15. Abstract:

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Focused Logistics is one of the four primary capabilities that must be developed to meet the challenges of the future. An evolution in logistics processes, Focused Logistics will provide the resource management backbone for future military operational planning. In order to develop this capability, the following challenges must be addressed: joint deployment and rapid distribution, information fusion, multinational logistics, agile infrastructure, and joint theater logistics management. The development and integration of information technology is the key to addressing these challenges and creating a final Focused Logistics solution that enhances the operational commander's ability to successfully direct the joint force of the future.

16.Distribution / Availability of Abstract:	**Unclassified** X	**Same As Rpt**	**DTIC Users**
17.Abstract Security Classification: UNCLASSIFIED			
18.Name of Responsible Individual: CHAIRMAN, JOINT MILITARY OPERATIONS DEPARTMENT			
19.Telephone: 841-6461		**20.Office Symbol:** C	

NAVAL WAR COLLEGE
Newport, R.I.

INFORMATION TECHNOLOGY: THE FOCUSED LOGISTICS ENABLER

by

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Lieutenant Commander, SC, USN

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

4 February 2002

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JMO Department, Faculty Advisor

Report Documentation Page

Report Date	Report Type	Dates Covered (from... to)
04 Feb 2002	N/A	-

Title and Subtitle Information Technology: The Focused Logistics Enabler	**Contract Number**
	Grant Number
	Program Element Number
Author(s)	**Project Number**
	Task Number
	Work Unit Number
Performing Organization Name(s) and Address(es) Joint Military Operations Department Naval War College 686 Cushing Road Newport, RI 02841-1207	**Performing Organization Report Number**
Sponsoring/Monitoring Agency Name(s) and Address(es)	**Sponsor/Monitor's Acronym(s)**
	Sponsor/Monitor's Report Number(s)

Distribution/Availability Statement
Approved for public release, distribution unlimited

Supplementary Notes

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Subject Terms

Report Classification unclassified	**Classification of this page** unclassified
Classification of Abstract unclassified	**Limitation of Abstract** UU

Number of Pages
25

Abstract of

INFORMATION TECHNOLOGY: THE FOCUSED LOGISTICS ENABLER

Joint Vision 2020 calls for a transformation in military capabilities to support U.S. global interests. The fall of the Soviet Union and the rise of terrorism accent the need to reshape our forces for maximum flexibility in an uncertain environment.

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"The more I see of war, the more I realize how it all depends on administration and transportation… A real knowledge of supply and movement factors must be the basis of every leader's plan."[1]

The rise of terrorism, the fall of the Soviet Union, and the constantly changing landscape of international politics fuels uncertainty about future adversaries. This uncertainty complicates the shaping of our armed forces. Joint Vision 2020 identifies Dominant Maneuver, Precision Engagement, Focused Logistics, and Full Dimensional Protection as the four capabilities crucial to military success in meeting future challenges.[2] Of the four capabilities, Focused Logistics addresses supply, movement, and other resource management factors essential to military effectiveness.

Focused Logistics is defined as: "The fusion of Information, Logistics and Acquisition, and Transportation technologies to provide rapid crisis response; track and shift assets while en route; and deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical levels of operations."[3] An evolutionary concept, Focused Logistics will provide the resource management backbone for future military operational planning. Technology is the common factor that will facilitate the successful integration of the various elements of Focused Logistics, resulting in a greater level of logistics efficiency. While information technology will more efficiently link all facets of the logistics process, the operational commander will need to determine how best to incorporate it for the greatest benefit. While a theater-level joint logistics command and control (C2) organization could provide oversight to the logistics process, the evolution and integration of information systems will obviate the need for such an organization. Therefore, I believe that the proper development and application of

information technology is the single most important challenge for realizing the Focused Logistics capability for 2020 and creating an advantage for our military forces.

In order to demonstrate the validity of this thesis, background information will be provided on the Focused Logistics challenges as promulgated in Joint Vision 2020. These challenges will be addressed individually with their respective information technology implications. Further discussion will showcase successful advances in logistics capabilities in line with the goals of Focused Logistics. Finally, recommendations and conclusions will be drawn from the study that demonstrate how information technology development will achieve the Focused Logistics capability envisioned for joint force operations in 2020, without radically altering the theater C2 organization.

Focused Logistics: Developing the Capability

To properly frame the development requirements for Focused Logistics, potential adversaries must first be assessed. Joint Vision 2020 anticipates that adversaries will take advantage of the global commercial industrial base and much of the same technology employed by our own forces.[4] Further, potential adversaries will attempt to use any options available to them, including Weapons of Mass Destruction and other asymmetric means, to create conditions that effectively counter our military capabilities.[5] Since technology and industrial resources in and of themselves will work effectively for both the U.S. and its adversaries, we must seek another avenue to create an advantage for our forces. Joint Vision 2020 states that this advantage will "come from leaders, people, doctrine, organizations, and training that enable us to take advantage of technology to achieve superior warfighting effectiveness."[6] Focused

Logistics development must follow this prescription for creating an advantage for our armed forces.

Joint Publication 4-0 highlights the challenges of Focused Logistics that will impact joint planning and logistics effectiveness in the future. For the purposes of this paper, the most important of these challenges are: joint deployment and rapid distribution, information fusion, multinational logistics, agile infrastructure, and joint theater logistics management.[7] Military organizations are making significant strides in these areas; success in addressing the shortcomings will determine the ultimate effectiveness of Focused Logistics for the warfighter.

The Challenges of Focused Logistics Development

Joint deployment and rapid distribution: This challenge involves the movement of joint forces into an area of operation, and the associated movement of material in support of those forces.[8] The emphasis, as denoted in the title, is on speed. Full employment of strategic airlift, sealift and commercial sources of transportation will facilitate rapid deployment and sustainment of forces. The U.S. Transportation Command (USTRANSCOM) holds the responsibility for coordinating this strategic movement as well as development of associated joint doctrine. USTRANSCOM executes the strategic lift mission through its component commands. The Air Mobility Command provides the strategic airlift, the Military Sealift Command does the same from the sea, and the Military Traffic Management Command provides additional commercial sea services as well as other functions.

Improved information networks are needed to enhance these transportation capabilities and accelerate delivery of resources. Additionally, these information systems will potentially

accelerate resource movement between operational areas, and provide a capability to deploy and sustain military forces in immature theaters.[9]

Information fusion: This involves "the timely and accurate access and integration of logistics data across units and combat support agencies throughout the world, providing reliable asset visibility and access to logistics resources in support of the warfighter."[10] The Global Combat Support System (GCSS) is a manifestation of information fusion.[11] GCSS enhances interoperability through a single platform for asset status across the services. In support of Focused Logistics, the GCSS will provide a common interface for information access to the warfighter and supporting organizations. Ultimately, this will result in a near real-time picture of resources in the logistics pipeline at all levels of activity in the combat spectrum. Information fusion is highly dependent on Automated Data Processing (ADP) infrastructure, information accuracy and availability.

Multinational logistics: In the foreseeable future, conflict with potential adversaries will most likely involve coalition partners in a combined effort.[12] Integrating our logistics functions with those of other nations is a daunting challenge which must be examined to take advantage of combined combat power. Focused Logistics doctrine seeks to achieve "equitable burden sharing among nations, operational efficiency, a reduced multinational footprint, stronger regional contact, and reduction in the costs of international peace operations."[13] Political and military leaders will need to jointly develop the framework through which our military forces will coordinate with other nations when transiting from peace to a conflict environment.

The United States continues to lead the introduction and development of enhanced logistics systems for better support to the warfighter. Potential coalition partners do not employ

the same level of innovation in their systems. For example, there is a "growing disparity in combat capability between European and U.S. forces,"[14] that potentially complicates multinational operations. Despite this difficulty, integrating multinational capabilities with our own will generate valuable operational benefits for the military commander. Utilizing multinational logistics capabilities will reduce demands on the United States to provide full support of forces from organic resources, and can lead to significant cost savings as well as reduced logistic force structure in the operational area.[15]

Agile infrastructure: The DoD maintains between 20 and 25 percent more facility infrastructure than needed to support its forces--at an annual excess cost of $3 to $4 billion.[16] Reducing these costs not only makes financial sense; it also falls in line with the reduced footprint goal of Focused Logistics. Footprint reduction involves the right-sizing of inventories, forces, facilities and equipment. In terms of material management, this reduction represents a shift from a "just in case" resource scenario to leaner, right-sized levels. Such right-sizing must be carefully implemented so as not to decrease readiness. Focused Logistics will replace the reassurance of a stockpile with the reassurance of effective "just in time" response to replenishment requirements. If Focused Logistics is to succeed in forward-deployed areas, information systems must accurately depict resource availability in-theater.

The right-sizing of inventories presents a difficult obstacle for the operational commander. Forward deployed bases typically house material owned by the Defense Logistics Agency as well as items owned by the specific services. This situation requires that coordination for inventory levels be completed by both service-specific and DoD planners. Operational commanders will need to rethink their readiness requirements in order to right-size

inventories. Therefore, information systems will need to provide a common picture of all material from all the services. Actual facilities management will require modification in line with inventory reductions. Facilities will need to support the installation of ADP equipment, associated material identification systems, and any other systems that are associated with the shift out of the "just in case" inventory model.

Joint theater logistics management: Focused Logistics doctrine aims to optimize current logistics practices through the synchronization of all logistics support efforts in-theater, with the objective of providing rapid, timely delivery of forces, materiel and sustainment to the CINC.[17] Information systems will support this effort by providing the CINC with data that factors into the synchronization process. The effectiveness of information systems holds implications for command and control of logistics at the theater level as well. This subject will be addressed in the "Conclusions" section of this paper.

Significant Advances in Support of Focused Logistics Development

Information technology: Much of the improvement in logistics processes comes from the advances in information technology. The integration of all the associated information subsystems and the follow-on dissemination to commanders and support agencies will provide a common picture of information regarding the disposition of resources. Such information is crucial to planning, particularly in a crisis environment. Several programs have been instituted to trigger unprecedented flow of information to the warfighter and supporting institutions. Two of the most important programs to support information fusion are the Global Transportation Network (GTN) and the Joint Total Asset Visibility (JTAV) program. These systems form the foundation to develop information fusion required for the GCSS.

The GTN is a web-based information tool managed by USTRANSCOM.[18] It is an automated command and control information system that supports the family of transportation users and providers, both Department of Defense (DoD) and commercial, by providing an integrated system of in-transit visibility information and command and control capabilities.[19] Information is uploaded to the system from various government and civilian agencies and may be queried by any authorized organization. This information is highly useful to the operational commander in peace and war, and for planning Joint Reception, Staging, Onward movement and Integration. GTN accepts, integrates and displays shipping information from DoD and service-specific information systems, Federal Express, Emery Worldwide, and many more government and commercial sources.[20]

JTAV provides CINCs, services and DoD components with timely and accurate information on the location, movement, status, and identity of units, personnel, equipment, and supplies.[21] JTAV gathers information on the identification, quantity, condition, location, movement and status of material units, personnel, equipment and supplies anywhere in the logistics pipeline at any time. The In-Transit Visibility (ITV) capability provides information on material moving within the transportation pipeline. GTN supplies ITV for the supported transportation systems.

Intertheater transport: USTRANSCOM has added significant capability to its already impressive intertheater sea and air lift assets by partnering with third-party entities providing specific movement services. The "Category A" program is a contract with commercial airline companies that provides per-pound cargo movement services to and from overseas locations.[22] The Patriot Express contract similarly provides for commercial airlift of

personnel as well as cargo.[23] The World-Wide Express (WWX) contract delivers high-priority, non-hazardous packages weighing less than 150 pounds from vendors to overseas Aerial Ports of Debarkation.[24] Information on resources within these pipelines is accessible through the GTN, JTAV, and other information platforms. These services, coupled with the strategic lift capability of USTRANSCOM, provide operational and tactical level planners with a multitude of options for material movement.

While there is a solid foundation for asset visibility at the intertheater level, problems occur once material arrives in theater. TAV depends on automated input devices to update the database. ADP infrastructure is relatively weak at the intratheater level.[25] For example, in EUCOM, there is very little intratheater ITV despite widespread access to the GTN and JTAV programs.[26] Furthermore, there is no visibility over items in transit sheds.[27] This problem is further compounded by the limits of organic intratheater lift assets. For example, despite successful implementation of USTRANSCOM's WWX program, it is not a true door-to-door program. The commercial carrier delivers its cargo to a central military receiving point. Material is then delivered to units; however, some material remains in a transshipment mode. Organic assets must then be employed to move material to its ultimate destination. The lack of intratheater visibility of material compounds the problem of moving material with organic lift. Aircraft load planners at the nodes where material is staged for onward movement suffer from the lack of material visibility; their load plans may not account for all material that could be loaded for a particular mission. While third-party transportation greatly assists in getting high priority material into the theater, care should be taken to avoid an increased burden on scarce

intratheater transportation assets. Greater visibility of material will facilitate the optimization of intratheater transport.

Recommendations

Highest priority: Information fusion is the critical enabler for the Focused Logistics concept. Therefore, building TAV capability must be the first priority. Two of the primary concerns are closing the gaps in asset visibility, and finding a way to solve the problem of stovepiped requisitioning systems between the services. Geographical CINCs must work to bolster their ADP infrastructure to facilitate information flow. Additionally, no matter what condition data processing infrastructure enjoys, systems development aimed at collecting data for TAV must strive to achieve total coverage of all assets. JTAV is capable of receiving data from the GTN, but GTN does not currently have total coverage of material moving in all theaters.[28] Further development of the source systems feeding GTN and JTAV will lead to greater coverage of information to levels required for Focused Logistics.

Closely related to data gathering difficulties is the presence of stovepiped requisitioning and inventory management programs. Standardization of information must be achieved if true TAV will be realized. Service-specific logistics management programs complicate standardization efforts. This obstacle may be overcome through further development of the philosophy currently employed in JTAV processes. JTAV is capable of receiving information from a multitude of sources. It is designed to take input from each service-specific requisitioning program and incorporate it into its database. This eliminates the problems associated with the introduction of a standard, joint logistics management program which would require radical changes in each of the services. Devising the central "box" that takes input from all the sources

preserves service-specific systems and expertise while providing standardization through a common information exchange platform. This information would provide the operational commander a common, all-service picture of resource disposition that can be used in operational planning for joint efforts in theater.

Supporting transformational steps: Develop doctrine that gives direction for achieving an agile infrastructure. Footprint reduction and the resulting transportation and financial benefits will only be achieved through guidance and agreement on how resources are distributed. USTRANSCOM is currently executing a study that will answer many of these questions. Their Strategic Distribution Management Initiative (SDMI) program will analyze "current distribution requirements, processes, and systems associated with integrated distribution management."[29] The SDMI study will produce results regarding acquisition, storage, distribution, and transportation practices that will directly influence the progression of the Focused Logistics capability.

Effective multinational considerations may also lead to reducing the footprint of logistics in the various theaters. While there are several aspects of multinational capabilities that should be addressed, the best place to start with regard to Focused Logistics is deciding how our technology and process improvement initiatives will interact with the capabilities of other nations. Serious thought should be given to increase sharing of our technology, particularly TAV-related items, with our international partners. The incorporation of our technologies with foreign infrastructure, particularly in forward deployed areas, will provide operational commanders greater flexibility with the positioning of assets, as well as preserving a standing relationship in a crisis action circumstance.

Aligning facilities, technology and infrastructure will also have ramifications for the workforce. Smaller, smarter inventories imply smaller and smarter workforce requirements. Workforce changes are always a difficult and sensitive subject. Therefore, operational commanders will need to plan for a recapitalization of the workforce. New skills associated with a technology-driven system will be a requirement for personnel operating at operational and tactical levels in the theater.

Conclusions

Based on this study of Focused Logistics challenges, the key to achieving an effective Focused Logistics system for 2020 lies with addressing information systems capabilities across the full spectrum of the logistics pipeline. Having the right information results in gaining the operational commander's confidence that the system will actually work as advertised and significantly enhance operations; there would be no reason to support a Focused Logistics package without an appreciable benefit.

Focused Logistics will create a force multiplying effect from the advantages it provides in the context of operational factors. The first factor that Focused Logistics affects is time. A right-sized infrastructure will enjoy strategically tuned inventories to support operations in peace and conflict. Asset availability will affect the factor of space and force on the battlefield; the faster we are able to properly equip our forces, the greater our advantage in dictating space on the battlefield. Focused Logistics delivers this advantage through agile infrastructure, transportation capability and complete knowledge of the disposition of assets. Furthermore, Focused Logistics will give us greater ability to manage the logistical aspect of culmination

points[30] by giving us the tools to track resource usage and determine where and when to replenish.

A lack of confidence in processes of the past generated fears that faults with the logistics system would result in a degradation in combat capability. Desert Storm illustrates the classic example of operational commanders' lack of confidence in logistics systems. Commanders sought to overcome the drawbacks of logistics systems by submitting multiple versions of the same requirement to increase their chances of having the material they needed.

> *"(During Desert Storm) assets were requisitioned several times when the same or like items could have been made available within the theater. The result was delays in satisfying the requirement, significant additional transportation costs incurred, and possibly delaying the movement of still more cargo causing bottlenecks throughout the entire process."*[31]

The success of Focused Logistics depends upon removing this type of aversion to logistics systems. The critical path to gaining this confidence lies with the design of information systems that will give the warfare commander and staff total visibility of assets. The real-world example above demonstrates common themes about the logistics system as it operates today. Inadequate visibility of requisitions and status creates problems that affect all levels of the process. These problems will be avoided with complete TAV. In Desert Storm, asset visibility would have solved two problems. First, once an asset was requested, visibility would have precluded any multiple ordering of material. The only necessary multiple orders would have been placed as a result of some event (loss, re-direction to a more critical area, etc.) that required a new requisitioning action. This information would have been available throughout the TAV spectrum, resulting in the ability of both customer and supplier to recognize the need for

reordering the asset. Secondly, TAV would have alerted logisticians that material to fill the requirement was already in theater. Naturally, this would have reduced process action time through assets already in place for distribution to the warfighter.

Had theater commanders possessed the information regarding those in-theater assets and avoided ordering material from outside the theater, the transportation pipeline would not have been unnecessarily tasked. Of course, the supported commander's needs are paramount in a conflict. However, commanders can help themselves by maximizing the efficiency of their supporting units, particularly their transportation assets.

Despite JCS doctrine advocating a theater-level C2 organization to oversee joint logistics operations, Focused Logistics will work without a radical change in C2 composition. The JCS advocates a logistics C2 organization to handle operational logistics. They are exploring the feasibility of a "single in-theater joint logistics organization whose mission would be to synchronize, prioritize, direct, integrate, and coordinate common user and cross-service logistics functions."[32] In this vein, it has been argued that a new C2 structure that controls all theater requisitions and distribution will eliminate redundancy in requisitioning actions between the services.[33]

A theater-level C2 organization does not solve the problem of lower-echelon commanders ordering duplicate requirements, nor does another reviewing authority instill confidence in the capabilities of a true Focused Logistics system. Such a C2 organization would act more as a "policeman" to stem the flow of redundant requirements, while adding time and another stage in the process where error may occur. The Director of Transportation, US Naval Forces Europe believes such an organization "…would not only slow down the pipeline, but

also add a lot of follow-up workload on the requisitioning activities."[34] If ITV and information is available to lower-echelon commanders, they will have the confidence that their requirements are being met, and will not duplicate orders to ensure they get at least the minimum required amount of what they need. A senior supply officer recently operating in EUCOM agrees: "What we don't need is another organization to idiot-proof the process. We do need good visibility by the requisitioner for status and more importantly, visibility by the existing transportation organization to support decision-making… In the end getting the material to the customer is more important than telling him stuff he has no control over."[35] If Focused Logistics is properly developed and operational commanders enjoy total visibility of their assets, a new C2 organization at the theater level will not be needed to handle the requirements review. The existing C2 will be able to make those and other logistics decisions in an information-rich environment covering all the services.

Robust TAV through an integrated information package is the key to achieving an effective Focused Logistics capability in support of our military forces in 2020. Asset visibility at tactical as well as operational levels will create a self-synchronizing environment where shared information leads to better resource management from theater to theater, while reducing unnecessary burdens on intertheater and intratheater transportation assets. The operational commander will therefore be free to concentrate on operational planning with the confidence that the Focused Logistics system effectively delivers required resources to the operational and tactical levels of operations.

Joint Vision 2020 describes the transformation of military capabilities that will modernize our forces into one that is "faster, more lethal, and more precise in 2020 than they are today."[36]

In order to build this force of the future, strong and flexible logistics capabilities must be developed to operate efficiently in an uncertain international environment. Focused Logistics gives the operational commander a high degree of flexibility to build and sustain forces in support of our policies. Further development of information technologies will enable Focused Logistics to help synchronize the joint military effort. Through systems that consolidate service-specific information, link that information throughout the logistics pipeline, and provide the operational commander a common picture of resource availability, Focused Logistics will provide a level of sustainment and resource distribution that will put our military forces in the best possible position to succeed across the entire range of military operations in the future.

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